R10660667

MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.
24590-HLW-MV-HDH-VSL-00002

Project:	***RPP-WTP***	P&ID:	***24590-HLW-M6-HDH-P0001***
Project No:	***24590***	Process Data Sheet:	***24590-HLW-MTD-HDH-00001*** 2
Project Site:	***Hanford***	Vessel Drawing	***24590-HLW-MV-HDH-P0004, P0005***
Description:	***Canister Decon Vessel 1***		

~~ISSUED BY~~ ~~RPP-WTP PDC~~

Reference Data

Charge Vessels (Tag Numbers)	***Not Required***
Pulsejet Mixers / Agitators (Tag Numbers)	***Not Required***
RFDs/Pumps (Tag Numbers)	***Not Required***

Design Data

Quality Level		***CM***	Fabrication Specs	***24590-WTP-3PS-MV00-TP001***		
Seismic Category		***SC-III***	Design Code	***Generally to ASME VIII Div 1***		
Service/Contents		***Nitric Acid, Water, Ceric Nitrate***	Code Stamp	***No***		
Design Specific Gravity		***1.25***	NB Registration	***No***		
Maximum Operating Volume	gal	***212 with Canister In Vessel***	Weights (lbs)	Empty	Operating	Test
Total Volume	gal	***630***	Estimated	***3400***	***21,200***	***21,200***
Environmental Qualification 2		***N/A***	Actual *			

Inside Diameter	inch	***30***			Wind Design	***None***	
Length/Height (TL-TL)	inch	***220 (OAL)*** 2			Snow Design	***None***	
		Vessel Operating	Vessel Design	Coil/Jacket Design	Seismic Design	***24590-WTP-3PS-MV00-TP002 24590-WTP-3PS-FB01-T0001***	
Internal Pressure	psig	***Atm***	***15***	***Note 1***	Seismic Base Moment *	ft*lb	
External Pressure	psig	***Atm***	***Atm***	***Note 1***	Postweld Heat Treat	***None***	
Temperature	°F	***149***	***225***	***Note 1***	Corrosion Allowance	Inch	***0.04***
Min. Design Metal Temp.	°F	***40***			Hydrostatic Test Pressure *	psig	

Note: Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

ERIC B. ISERN
STATE OF WASHINGTON
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REGISTERED
PROFESSIONAL ENGINEER
12/6/05

EXPIRES: 07/28/07

This Bound Document Contains a total of 3 Sheets.

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	REVIEWER	APPROVER
2	12/27/05	Issued for Permitting Use	G. Thompson	B. Makadia / L. Han	C. Slater	J. Julyk
1	3/24/04	Issued for Permitting Use	K. Brightman	B. Balakrishnan	C. Slater	M. Hoffmann
0	10/29/02	Issued for Permitting Use	J. Jackson	C. Slater	N/A	S. Kirk

	MECHANICAL DATA SHEET: VESSEL	PLANT ITEM No. 24590-HLW-MV-HDH-VSL-00002

Materials of Construction

Component	Material	Minimum Thickness / Size	Containment
Lid Assembly	B-265 2	See Drawing	N/A
Shell	B-265 2	See Drawing	N/A
Bottom Head	B-265 2	See Drawing	N/A
Support	B-265 2	See Drawing	N/A
Shaft	304SS Minimum	N/A	N/A
Bearings	304SS Minimum	N/A	N/A
Pipe	B-861/B-363 Seamless	See Drawing	N/A
Tubing	B-338 2	See Drawing	N/A
Forgings/ Bar stock	B-381 F2 / SB348-2 Note 5 △2	See Drawing	N/A
Gaskets	Note 3	N/A	N/A
Bolting	A-193 B8 / A-194 8	N/A	N/A

Miscellaneous Data

Orientation	Vertical	Support Type	Collar
Insulation Function	Not Applicable	Insulation Material	Not Applicable
Insulation Thickness (inch)	Not Applicable	Internal Finish	Welds Descaled as Laid
		External Finish	Welds Descaled as Laid

Remarks

* To be determined by the vendor.

Note 1: Steam coil design pressure = 180 psig, design temperature = 393°F
Cooling coil design pressure = 119 psig, design temperature = 174°F

Note 2: Vessel volumes are approximate and do not account for manufacturing tolerances, nozzles, and displacement of internals.

Note 3: Body flange gasket shall be Garlock Helicoflex HN 208A seal configuration with titanium jacket. △2

Note 4: Contents of this document are Dangerous Waste Permit affecting.

BECHTEL	**MECHANICAL DATA SHEET: VESSEL**	PLANT ITEM No. ***24590-HLW-MV-HDH-VSL-00002***

Equipment Cyclic Data Sheet

Component Plant Item Number:	***HDH-VSL-00002***
Component Description	***Melter 1 Canister Decon Vessel***

The information below is provisional and envelopes operational duty for fatigue assessment. It is not to be used as operational data.

Materials of Construction	***SB-265 2***
Design Life	***40 Years***
Component Function and Life Cycle Description	***A cycle consists of the following:*** • ***A 10,000 lb canister will be loaded into the vessel and the lid will be closed*** • ***The vessel will fill to the overflow with one-molar nitric acid and Cerium +4 solution.*** • ***The heating coil will raise the temperature of the liquid from 68°F to 149°F.*** • ***Heating and cooling coils will maintain the temperature of the liquid at 149°F for 6 hours.*** • ***The nitric acid solution will be drained from the vessel*** • ***The upper and lower spray rings will rinse the canister with nitric acid and demineralized water*** • ***Flow to the upper spray ring will stop, the lid will open, and the canister will be slowly removed from the vessel while the lower spray ring continues to rinse the canister.***

Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	***N/A***	***N/A***	***N/A***	
Operating Pressure	psig	***Atm***	***Atm***	***29,200***	
Operating Temperature	°F	***48***	***149***	***29,200***	
Contents Specific Gravity		***1.00***	***1.25***	***29,200***	
Contents Level	inch	***Empty***	***Full***	***29,200***	
Localized Features					
Vessel and Supports		***Empty / Full+Canister***		***29,200***	

Notes

Cycle Increase: The Seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.

Note 5: Bar SB348-2 is used for Spray Nozzles P/N 08D & 09D, Rollers and Roller Pins P/N 18C & 18D, Thermowells P/N 38A & 38C, Stabilizer bars P/N 19B, Lid Hold Downs P/N 28B & 31K. △2

MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No. R10656187

24590-HLW-MV-HDH-VSL-00002

Project:	RPP-WTP	P&ID:	24590-HLW-M6-HDH-00001
Project No:	24590	Process Data Sheet:	24590-HLW-MTD-HDH-00001
Project Site:	Hanford	Vessel Drawing	24590-HLW-MV-HDH-00004, 00005
Description:	Canister Decon Vessel 1		

ISSUED BY RPP-WTP PDC

Reference Data

Charge Vessels (Tag Numbers)	Not Required
Pulsejet Mixers / Agitators (Tag Numbers)	Not Required
RFDs/Pumps (Tag Numbers)	Not Required

Design Data

Quality Level		CM	Fabrication Specs	24590-WTP-3PS-MV00-T0001		
Seismic Category		SC-III	Design Code	Generally to ASME VIII Div 1		
Service/Contents		Nitric Acid, Water, Ceric Nitrate	Code Stamp	No		
Design Specific Gravity		1.25	NB Registration	No		
Maximum Operating Volume	gal	212 with Canister in Vessel	Weights (lbs)	Empty	Operating	Test
Total Volume	gal	630	Estimated	3400	21,200	21,200
ENVIRONMENTAL QUALIFICATION: N/A			Actual *			

Inside Diameter	inch	30			Wind Design	None	
Length/Height (TL-TL)	inch	220 (OAL)			Snow Design	None	
		Vessel Operating	Vessel Design	Coil/Jacket Design	Seismic Design	24590-WTP-3PS-MV00-T0002 24590-WTP-3PS-FB01-T0001	
Internal Pressure	psig	Atm	15	Note 1	Seismic Base Moment *	ft*lb	
External Pressure	psig	Atm	Atm	Note 1	Postweld Heat Treat	None	
Temperature	°F	149	225	Note 1	Corrosion Allowance	Inch	0.04
Min. Design Metal Temp.	°F	40			Hydrostatic Test Pressure *	psig	

Materials of Construction

Component	Material	Minimum Thickness / Size	Containment
Lid Assembly	B-265 2	See Drawing	N/A
Shell	B-265 2	See Drawing	N/A
Bottom Head	B-265 2	See Drawing	N/A
Support	B-265 2	See Drawing	N/A
Shaft	304SS Minimum	N/A	N/A
Bearings	304SS Minimum	N/A	N/A
Pipe	B-861/B-363 Seamless	See Drawing	N/A
Tubing	B-338 2	See Drawing	N/A
Forgings/ Bar stock	B-381 F2 / SB348-2 Note 5	See Drawing	N/A
Gaskets	Note 3	N/A	N/A
Bolting	A-193 B8 / A-194 8	N/A	N/A

Miscellaneous Data

Orientation	Vertical	Support Type	Collar
Insulation Function	Not Applicable	Insulation Material	Not Applicable
Insulation Thickness (inch)	Not Applicable	Internal Finish	Welds Descaled as Laid
		External Finish	Welds Descaled as Laid

Remarks

* To be determined by the vendor.

Note 1: Steam coil design pressure = 180 psig, design temperature = 393°F
Cooling coil design pressure = 119 psig, design temperature = 174°F

Note 2: Vessel volumes are approximate and do not account for manufacturing tolerances, nozzles, and displacement of internals.

Note 3: Body flange gasket shall be Garlock Helicoflex HN 208A seal configuration with titanium jacket. (3)

Note 4: Contents of this document are Dangerous Waste Permit affecting.

BECHTEL	MECHANICAL DATA SHEET: VESSEL	PLANT ITEM No. 24590-HLW-MV-HDH-VSL-00002

Equipment Cyclic Data Sheet

Component Plant Item Number:	HDH-VSL-00002
Component Description	Melter 1 Canister Decon Vessel

The information below is provisional and envelopes operational duty for fatigue assessment. It is not to be used as operational data.

Materials of Construction	SB-265 2
Design Life	40 Years
Component Function and Life Cycle Description	A cycle consists of the following: • A 10,000 lb canister will be loaded into the vessel and the lid will be closed • The vessel will fill to the overflow with one-molar nitric acid and Cerium +4 solution. • The heating coil will raise the temperature of the liquid from 68°F to 149°F. • Heating and cooling coils will maintain the temperature of the liquid at 149°F for 6 hours. • The nitric acid solution will be drained from the vessel • The upper and lower spray rings will rinse the canister with nitric acid and demineralized water • Flow to the upper spray ring will stop, the lid will open, and the canister will be slowly removed from the vessel while the lower spray ring continues to rinse the canister.

Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	N/A	N/A	N/A	
Operating Pressure	psig	Atm	Atm	29,200	
Operating Temperature	°F	48	149	29,200	
Contents Specific Gravity		1.00	1.25	29,200	
Contents Level	inch	Empty	Full	29,200	
Localized Features					
Vessel and Supports		Empty / Full+Canister		29,200	

Notes

Cycle Increase: The Seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.

Note 5: Bar SB348-2 is used for Spray Nozzles PIN 08D & 09D, Rollers and Roller Pins PIN 18C & 18D, Thermowells PIN 38A & 38C, Stabilizer bars PIN 19B, Lid Hold Downs PIN 28B & 31K.

Approval

Rev	Description	System Engr	Vessel Engr	Checked	Reviewed	Approved	Date
0	Issue for Purchase	D. Choi	R. Simmons	M. Staley C. Slater	M. Wright	M. Hoffmann	6/16/03
1	Revised as Indicated	G. Fenton	R. Simmons	T. Galioto C. Slater	D. Yarbrough	M. Hoffmann	10/29/03
2	Issued to Incorporate 24590-WTP-SDDR-PROC-04-01079	R. Tometczak	Paul Polani	Steve Crow	Jeff Pullen	M. Hoffmann	1/21/05
3	Revised per Note 3 on sheet 1 of 2.						11/28/05